UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,330	01/26/2001	Kenichi Ohta	35.C15056	5124

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EXAMINER
THOMPSON, JAMES A

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/769,330	OHTA, KENICHI
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2007*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,7,8,10-12,14,17 and 18* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,7,8,10-12,14,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.
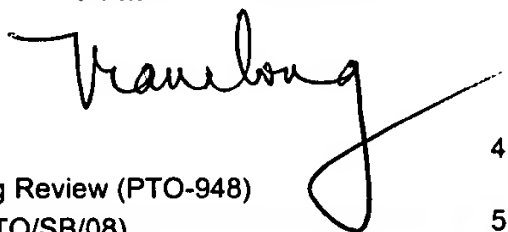
Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some * c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

DOUGLAS Q. TRAN
PRIMARY EXAMINER

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 February 2007 has been entered.

Response to Arguments

2.   Applicant's arguments filed 12 February 2007 have been fully considered but they are not persuasive. Firstly, Examiner did *not* state that Sakai (USPN 6,735,740 B2) "merely discloses that image data and its corresponding flag data are reduced in size by the same method" [emphasis added], since this statement would imply that Sakai does not teach other things. Examiner simply cited particular teachings of Sakai as said teachings relate to the claims outstanding at the time of the previous office action, mailed 08 September 2006. Sakai clearly teaches more than simply what was relied upon in said previous office action. As such, Sakai, along with the other cited references, have been reconsidered in light of the present amendments to the claims. Applicant's arguments filed 12 February 2007 are directed to the present amendments to the claims. The presently amended claims are deemed to be rendered obvious by the previously cited prior art references. Accordingly, new prior art rejections based on the previously cited references are set forth in detail below.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.   Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 recites an "apparatus according to claim 2", but claim 2 is canceled. Claim 11 is rejected due to its dependency from claim 10.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 1, 7-8 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), and Seki (US Patent 5,838,839).**

Regarding claims 1, 17 and 18: Sakai discloses an image processing apparatus (figure 5 of Sakai). Further details of said apparatus are shown in figure 9 (column 3, lines 35-36 of Sakai), figures 24-26 (column 4, lines 7-14 of Sakai) and figure 32 of Sakai (column 4, lines 30-31 of Sakai).

Sakai further discloses input means (figure 32(65) and column 15, lines 13-17 of Sakai) for inputting image data (column 5, lines 27-30 of Sakai); means (figure 5(11) of Sakai) for obtaining flag data indicating an attribute (column 6, lines 15-18 of Sakai) of an image corresponding to the image data from the image data (figure 6 and column 6, lines 21-26 of Sakai), the flag data indicative of a character or a figure (graphic) (column 6, lines 24-26 of Sakai); first pixel density converting means (figure 32(61 (portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the image data at a designated magnification (figure 13(S36) and column 8, lines 57-62 of Sakai); and second pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the flag data in accordance with the designated magnification using logical arithmetic operating processes of said flag values (figure 13(S36) and column 8, lines 57-62 of Sakai). The partial image, which includes the attribute (flag) data (figure 10C of Sakai), is displayed at a specified magnification (column 8, lines 57-62 of Sakai). Therefore, said flag data is converted in accordance with the designated magnification since said flag data is directly associated with said partial image data.

Sakai further discloses output means (figure 5(14) of Sakai) for making a process of the pixel density converted image data (column 5, lines 40-45 of Sakai) different every pixel in accordance with the flag data (column 5, lines 47-53 of Sakai) and outputting the processed image data (column 5, lines 40-41 of Sakai); and that said second pixel density converting means makes a converting method different in accordance with attributes of the flag data (column 8, lines 52-55 of Sakai – *different reduction ratios according to attribute data of partial image*).

Said first pixel density converting means and said second pixel density converting means correspond to the respective portions of the physically embodied computer software, executed by the CPU (figure 32(61) and column 15, lines 17-20 of Sakai), that perform the functions of said first pixel density converting means and said second pixel density converting means.

Sakai does not disclose expressly that said flag data is generated by a generating means and said flag data is generated with respect to each pixel of the image; that said flag data can also be indicative of a mesh area; that said image data input is color image data; that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

Kanno discloses generating means (figure 1(10) of Kanno) for generating data indicative of the attribute of an image corresponding to the image data (column 6, lines 35-45 of Kanno); that said image data is color image data (column 9, lines 51-54 of Kanno); and that said data indicative of the attribute of an image (flag data in Sakai) can also be indicative of a mesh area (figure 1 and column 6, lines 35-45 of Kanno – *photograph area of halftone data determined, which corresponds to "mesh area" as recited in claim*).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to process color image data and generate the data indicative of the attributes of an image, wherein the indicated attribute can also include a halftone photograph area ("mesh area" in claim), as taught by Kanno, said indicative data being the flag data taught by Sakai. The motivation for doing so would have been that the value of the parameter used to determine the feature of the image region can be used in determining the amount of correction required (column 6, lines 58-62 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai.

Sakai in view of Kanno does not disclose expressly that said flag data is generated with respect to each pixel of the image; that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values

using a plurality of pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.
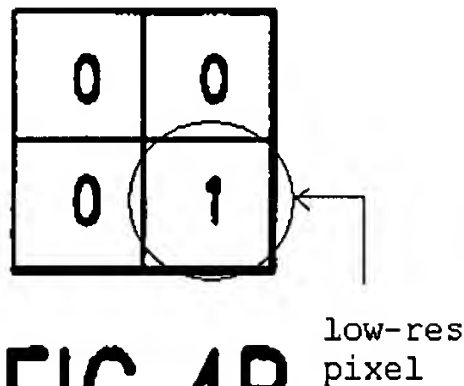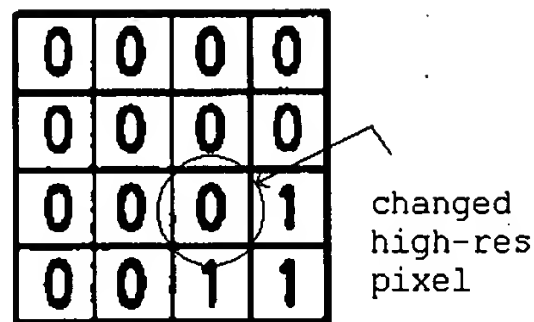
Azumaya discloses flag data that is generated with respect to each pixel of the image (figure 21 and column 14, lines 18-27 of Azumaya). As can clearly be seen in figure 21 of Azumaya, an attribute flag is generated for each individual pixel.

Sakai in view of Kanno is combinable with Azumaya because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the flag data specifically for each pixel, as taught by Azumaya. The suggestion for doing so would have been that the attribute flags can be processed in synchronism with buffered image data (column 14, lines 29-34 of Azumaya), thus improving the data processing flow speed. Therefore, it would have been obvious to combine Azumaya with Sakai in view of Kanno.

Sakai in view of Kanno and Azumaya does not disclose expressly that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

Harrington discloses performing a logical arithmetic opera-ting process of flag values using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement (figures 4a-4d; figures 5a-5d; and column 5, lines 2-5 of Harrington). The filling in operation (column 5, lines 2-5 of Harrington) is based on the value of a nearest neighboring pixel, such as demonstrated in figures 4a-4d and figures 5a-5d of Harrington. For example, in figure 4b of Harrington, the pixel in the bottom right corner has a value of "1" and the pixel in the top left corner has a value of "0". Thus, when the resolution is increased in figure 5b of Harrington, a "0" is placed for the top left pixel among the four pixels in the bottom right corner, as shown in the figure below.

```
┌─────┬─────┐
│  0  │  0  │
├─────┼─────┤
│  0  │  1  │
└─────┴─────┘
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FIG.4B   low-res
              pixel

```
┌───┬───┬───┬───┐
│ 0 │ 0 │ 0 │ 0 │
├───┼───┼───┼───┤
│ 0 │ 0 │ 0 │ 0 │
├───┼───┼───┼───┤
│ 0 │ 0 │ 0 │ 1 │
├───┼───┼───┼───┤
│ 0 │ 0 │ 1 │ 1 │
└───┴───┴───┴───┘
```

changed
high-res
pixel

FIG.5B

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a nearest neighbor pixel when enlarging the magnification of a digital image, as taught by Harrington, using said second pixel density converting means taught by Sakai. Thus, the pixel converting method of said first pixel density converting means is different from the pixel density converting method of said second pixel density converting means. The motivation for doing so would have been to help mitigate image artifacts, such as jagged edges (column 5, line 2 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya.

Sakai in view of Kanno, Azumaya and Harrington does not disclose expressly that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction.

Seki discloses performing logical arithmetic processing using a plurality of pixels near a target pixel when the designated magnification is reduction (figure 2 and column 2, line 66 to column 3, line 3 of Seki).

Sakai in view of Kanno, Azumaya and Harrington is combinable with Seki because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a plurality of pixels near a target pixel when reducing image magnification, as taught by Seki, using said second pixel density converting means taught by Sakai. The suggestion for doing so would have been that the number of pixels are to be decreased for a lower magnification image and thus local neighborhood data must be used for a scaled down image (column 2, lines 53-63 of Seki). Therefore, it would have been obvious to combine Seki with Sakai in view of Kanno, Azumaya and Harrington to obtain the invention as specified in claims 1, 17 and 18.

Further regarding claim 17: The apparatus of claim 1 performs the method of claim 17.

Further regarding claim 18: The apparatus of claim 1 performs processing using physically embodied computer software (column 15, lines 38-45 of Sakai) and thus performs the steps of the computer program of claim 18.

Further regarding claim 7: Kanno discloses that said generating means generates the flag data (column 6, lines 40-45 of Kanno) on the basis of a change (ΔD_{max}) in image data of a pixel near a target pixel (column 6, lines 35-40 of Kanno).

Regarding claim 8: Sakai in view of Kanno and Azumaya does not disclose expressly that said first pixel density converting means uses one of a linear interpolating method and bicubic spline interpolation.

Harrington discloses using linear interpolation for changing image resolution (column 4, lines 25-27 of Harrington).

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use linear interpolation in said first pixel density converting means. The motivation for doing so would have been to reduce blocky artifacts (column 4, lines 18-21 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya to obtain the invention as specified in claim 8.

7. **Claims 3-4 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Okubo (US Patent 5,392,137).**

Regarding claim 3: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that when said flag data is a character flag, said output means performs a sharpness emphasis to said image data.

Okubo discloses that, for edges such as characters (column 10, lines 1-5 of Okubo), a filtering process is performed (column 9, lines 53-57 of Okubo), said filtering process being sharpness emphasis (column 4, lines 6-9 of Okubo).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to sharpen character image data, as taught by Okubo. The motivation for doing so would have been to keep the outlines of small characters clear (column 10, lines 2-5 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 3.

Regarding claim 4: Sakai in view of Kanno and Azumaya does not disclose expressly that, when said flag data is a mesh flag, said output means performs a low pass filter process to said image data.

Harrington discloses smoothing image data with a low pass filter (column 4, lines 47-50 of Harrington).

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a low pass filter to smooth data, as taught by Harrington. The motivation for doing so would have been to produce a smoother effect for the image data (column 4, lines 49-50 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya.

Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that, when said flag data is a mesh flag, said output means performs a low pass filter process to said image data.

Okubo discloses detecting whether or not a pixel is in a mesh image region (column 7, lines 26-29 of Okubo) and storing data indicating whether or not said pixel is in a mesh image region (column 7, lines 29-32 of Okubo). Further, Okubo teaches that mesh image regions can be processed through a

smoothing filter (column 1, lines 46-49 of Okubo) to eliminate undesired characteristics (column 1, lines 38-42 of Okubo).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an indicator corresponding to a mesh image region, as taught by Okubo, said indicator being a flag in the set of flag data taught by Sakai. Further, if said indicator indicates a mesh region, a smoothing filter is applied, as taught by Okubo, using the low-pass filter taught by Harrington as the specific type of smoothing filter. The motivation for doing so would have been to correct for image artifact problems that affect a mesh image region of an image (column 1, lines 38-42 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 4.

Regarding claim 10: Sakai discloses that said output means makes a binarization process to the image data different in accordance with the flag data (column 8, lines 55-59 of Sakai).

Regarding claim 11: Sakai does not disclose expressly that, when said flag data is the character flag or figure flag, an error diffusion process is performed to the image data.

Kanno discloses performing error diffusion on image data when said image data is a character or figure (line image) (column 5, lines 55-60 of Kanno).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform error diffusion based the image region being a character or figure region, as taught by Kanno. The motivation for doing so would have been to preserve the resolution of the characters and/or lines of the figures (column 5, lines 58-60 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai to obtain the invention as specified in claim 11.

8.   **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Ishikawa (US Patent 5,729,664).**

      Regarding claim 12: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that said output means changes color conversion coefficients in accordance with the flag data and performs a color converting process of the image data.

      Ishikawa discloses changing the color conversion coefficients (column 10, lines 29-35 of Ishikawa) in accordance with flag data (column 10, lines 18-23 of Ishikawa) and performing a color converting process of the image data (column 10, lines 47-52 of Ishikawa).

      Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Ishikawa because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a per-son of ordinary skill in the art to perform the color conversion processing of the image data in accordance with the flag data, as taught by Ishikawa. Since color conversion is performed to create the output, said color conversion would be performed by said output means. The motivation for doing so would have been to be able to convert between a plurality of different color spaces (column 3, lines 9-14 of Ishikawa), such as the color spaces for each different type of image data. Therefore, it would have been obvious to combine Ishikawa with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 12.

9.   **Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Sekine (US Patent 5,719,967).**

      Regarding claim 14: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that, in the case where said input means inputs data described by a page description language from a computer, said generating means generates the flag data on the basis of attribute information of the page description language.

      Sekine discloses using page description language for the image data (column 6, lines 56-57 of Sekine), detecting the attributes stored in said page description language (column 6, lines 56-60 of Sekine), and supplying said attributes to an image processing apparatus (column 6, lines 60-62 of Sekine).

      Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Sekine because they are from the same field of endeavor, namely digital image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use page description language as the

input data and provide attribute data from the page description language data, as taught by Sekine, said attribute data being provided as the flag data taught by Sakai. The motivation for doing so would have been to be able to provide both the image data and the attribute data at once (column 6, lines 60-62 of Sekine), instead of having to compute the flag data from the image data. Therefore, it would have been obvious to combine Sekine with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 14.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James A. Thompson
Examiner
Technology Division 2625

JAT
21 April 2007

DOUGLAS Q. TRAN
PRIMARY EXAMINER